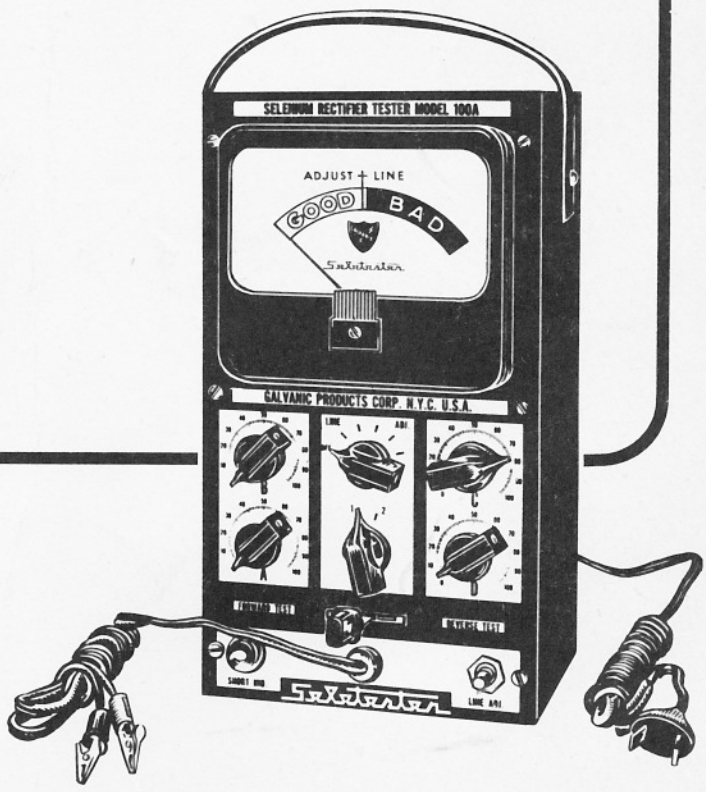
OPERATING INSTRUCTIONS

FOR THE

GALVANIC

Selvatester

ELECTRONIC SELENIUM RECTIFIER TESTER



GALVANIC PRODUCTS CORPORATION
110 EAST HAWTHORN AVENUE • VALLEY STREAM, N. Y.

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NOTE: Details of how to test rectifiers in half-wave circuits without unsoldering leads or removing from set are included in part 2 of "Specific Operating Instructions".

GENERAL INFORMATION

Your Galvanic "Seletester", a precision instrument, is the first practical low-priced selenium rectifier tester. It provides a quick, thorough, accurate and positive means of testing and electroforming all miniature electronic selenium rectifiers of the half-wave and doubler types used in transformerless power supplies for radic and television sets and other common electronic applications. It will also test any new rectifiers of this type that may be introduced, and Galvanic will mail the new dial settings to the owners as such rectifiers are introduced.

Your "Seletester" completely removes the mystery from testing selenium rectifier stacks. No longer will you have to spend your valuable time (which is worth considerable money) experimenting with rectifiers, rectifier circuits and totally inadequate tests, such as the ohmeter or substitution methods. Now you can quickly and easily determine the quality of any electronic selenium rectifier--many times without even removing it from the set. Your "Seletester" will also eliminate damage to other good components if the replacement rectifier is badly deformed.

This instruction manual is clearly written to give you all the basic knowledge necessary on selenium rectifiers and your "Seletester". Read it through carefully before using the instrument. If you don't have time to read the complete manual, make sure you do read the detailed operating instructions on page 8 before using.

Your "Seletester" is ruggedly constructed, and special protective circuits make it impossible to damage the meter or any other components even though the tester is completely misused or the rectifier is connected backwards. No fuses or circuit breakers are used; and, therefore, no fuses or breakers ever have to be replaced or reset. All protection in the unit comes from a special relay circuit and a special non-linear shunt, which are quick and positive acting.

The easy reading 4 1/2" scale on the D'Arsonval meter is accurately calibrated, and it should be remembered when using the "Seletester" that a rectifier stack, which reads "bad", is definitely bad and should be rejected. It is also good practice to reject all stacks, which indicate in the doubtful area.

Your "Seletester" has purposely been designed as small and light as is possible so that it is easily portable and takes a minimum of vital bench or shelf area. Also, the test leads are permanently connected so that they will not be misplaced. When carrying the instrument, these leads may be wrapped around the tester and inserted into the line cord opening on the rear of the case.

WHAT A SELENIUM RECTIFIER IS AND HOW IT WORKS

The selenium rectifier is a dry disc type metallic rectifier that was first introduced in this country in 1938. At the beginning, these rectifiers could block only low voltage and were normally used in applications requiring high current and low voltages. In 1946, a technique was developed for making high voltage selenium rectifier plates. This led to the "miniature electronic selenium rectifier stack", which has since become extremely popular in half-wave and doubler circuits as used in radio sets, television sets and other electronic equipment. In fact it now seems that because of its many advantages, such as long life, light weight, cool operation, low temperature rise and adaptability to transformerless power supplies, this rectifier will soon have completely replaced vacuum tubes in the aforementioned applications.

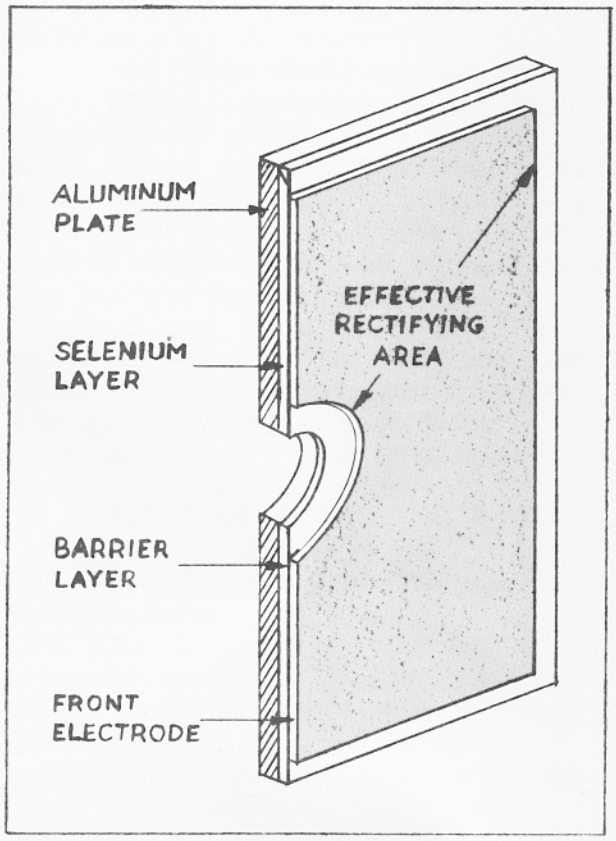


Fig. 1-Section of Selenium Rectifier Cell

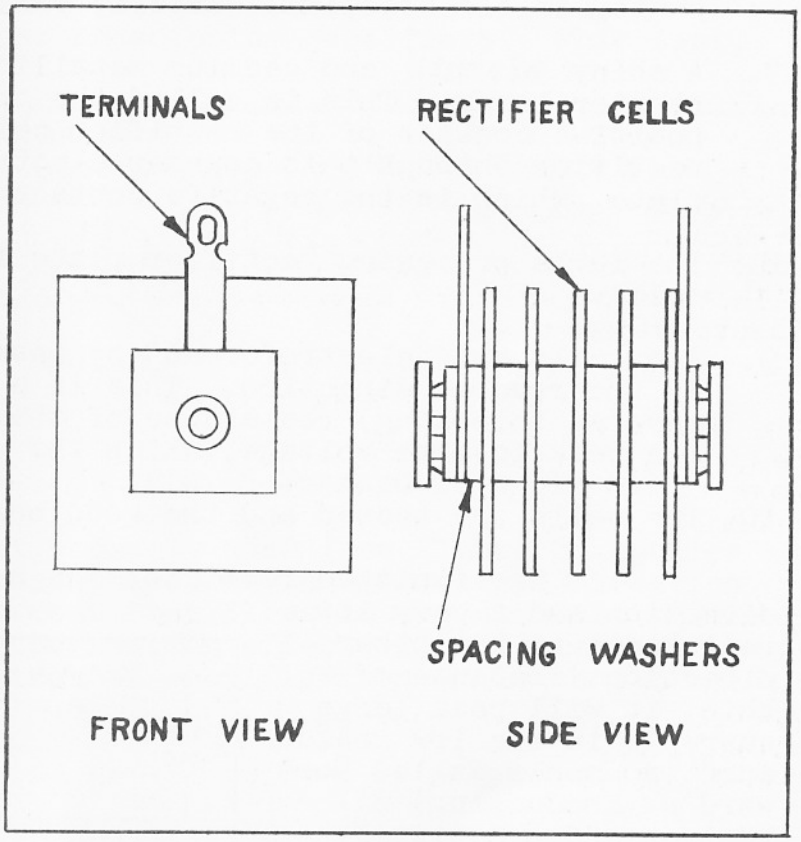


Fig. 2-Selenium Rectifier Stack

Figure 1 shows a blown up cross-section of a selenium rectifier cell. Each "miniature electronic selenium rectifier stack" is built of a number of these cells in series, as shown in Figure 2.

The technique of manufacturing these rectifiers is extremely interesting and quite involved, as the following description indicates:

1. An aluminum baseplate is either etched or sand-blasted to obtain a rough surface.

2. This aluminum plate is then nickel plated -- the nickel being applied directly to the aluminum.

3. Specially processed selenium powder is sprinkled onto the aluminum plate.

4. This powder is pressed into a solid mass, which adheres to the roughened surface. This pressing is done under very carefully regulated pressures and temperatures.

5. The aluminum plate with the selenium on it is subjected to a special heat treatment, which turns the selenium from a non-conductor to a semi-conductor (a relatively poor conductor of electricity). This process turns the selenium from black to gray.

6. A layer of lacquer only 4 or 5 millionths of an inch thick is applied on top of the selenium. This is called the barrier layer.

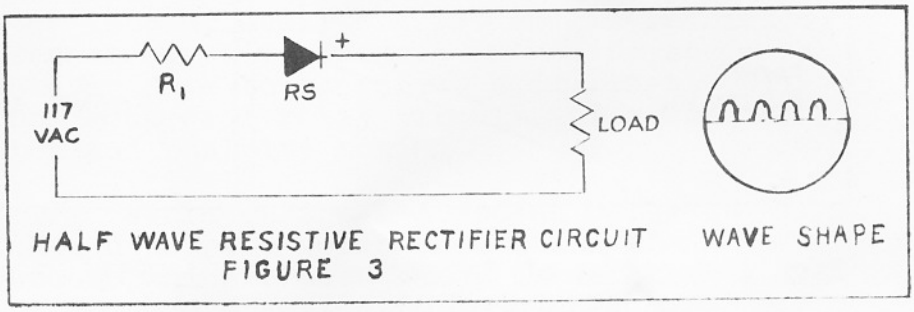
7. A shiny **bismuth** and cadmium metallic alloy is applied over the barrier layer. This is called the counter-electrode and is the positive contact of the rectifier cell. Contact is made to the rectifier through this counter-electrode and the aluminum baseplate, which is the negative contact of the rectifier cell.

8. The large processed rectifier plate is cut into smaller rectifier cells.

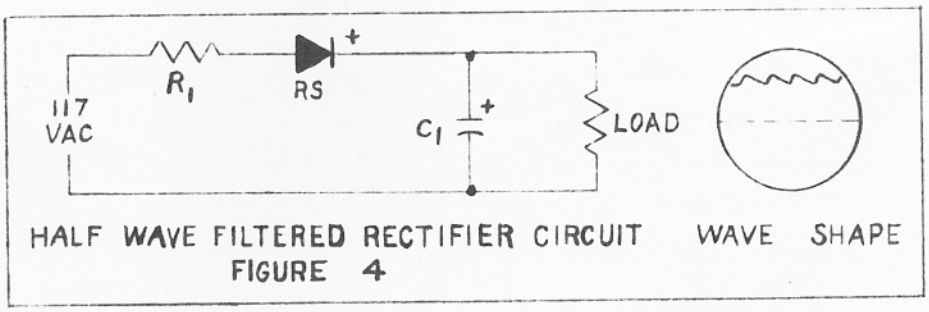
9. The cells are "electroformed" by passing current through the plate in the reverse direction. This is a process that increases the reverse (blocking) resistance of the cells and, also, increases the peak inverse voltage, which the cell can block.

10. The cells are tested and the good ones are assembled into stacks.

The finished rectifier has a very high resistance in one direction and a very low resistance in the other direction. Because of this, it will pass large currents in the low resistance (commonly called forward or conducting) direction and practically no current at all in the reverse direction. The result of this action in a circuit is half-wave rectification as shown in Figure 3, which shows a simple rectifier stack in a circuit and, also, shows the waveshape of the output. To get smooth D.C. out of such a circuit, a filter condenser is used, as shown in Figure 4.



HALF WAVE RESISTIVE RECTIFIER CIRCUIT WAVE SHAPE
FIGURE 3



HALF WAVE FILTERED RECTIFIER CIRCUIT WAVE SHAPE
FIGURE 4

BASIC SELENIUM RECTIFIER TESTING PRINCIPLES

A vacuum tube rectifier, which is operating properly, passes current only in the forward (conducting) direction. Therefore, the only losses, which can cause the overheating and low output voltage, are the forward losses. For this reason the only tests necessary on a rectifier tube are a "short" test and an 'butput voltage" test.

A selenium rectifier, however, passes a small amount of leakage current in the reverse direction. Because the rectifier has a high resistance in this direction, the product of the reverse resistance and the reverse current (which is the reverse loss in watts) is appreciable and leads to additional heating of the rectifier besides that caused by the forward losses. If this leakage current is excessive, it can also cause low output voltage and damage to the electrolytic condenser.

Because of this, when testing rectifier stacks, we must not only test for forward conductivity and short circuits, but also for reverse leakage current. While forward conductivity is often measured by an output voltage test on vacuum tube rectifiers, it is usually measured by a "short circuit" test on selenium rectifiers. This test, shown in Figure 5, measures the current passed by the rectifier at a given set voltage. Basically, this is the standard E-I method of measuring resistance or conductivity. The voltage used is the rated drop across the rectifier at rated load current and is determined by its effect on output voltage and by the heat generated by the forward losses. For most manufacturers' stacks, this is about 1.4 V.A.C. per cell.

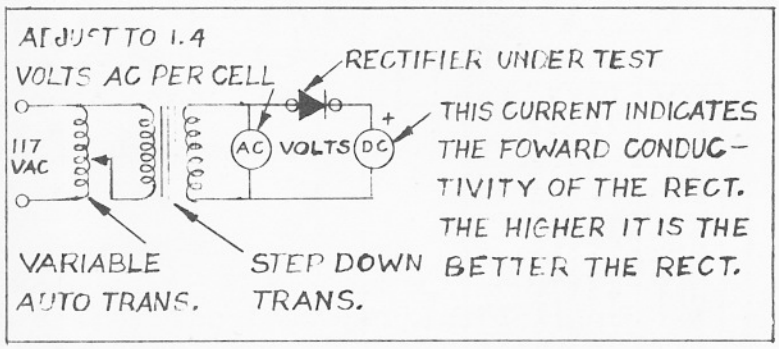


Fig. 5-Forward Test Circuit

The reverse test most commonly used (see Figure 6) applies one-half wave pulsating D.C. across the stack in the reverse direction, and measures the average D.C. current that flows in the circuit. Maximum limits are set according to the heating effect. These limits are usually about 10 ma. per square inch of rectifier area. It should be noted that the maximum reverse leakage for one plate or a number of stacked plates is the same but that the peak test voltage goes up proportionately as the number of plates in series is increased. Figures 5 and 6 do not have provision for indicating or protecting against shorted rectifiers. It can readily be seen that a shorted stack would seriously damage the ammeter in both the forward or reverse circuits. In practice, when these circuits are used by rectifier manufacturers, special protective relay circuits (which are often quite complex and expensive) are used to protect these meters.

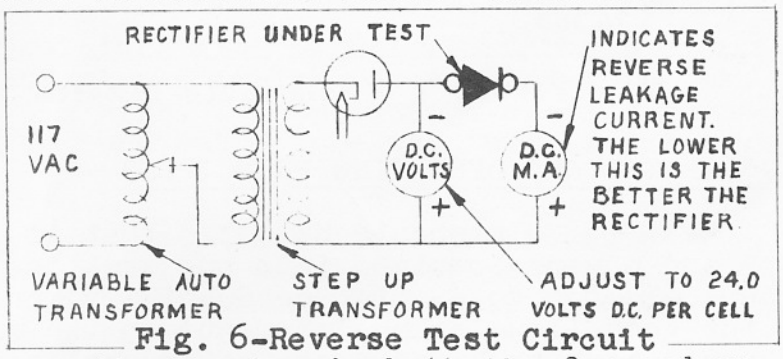
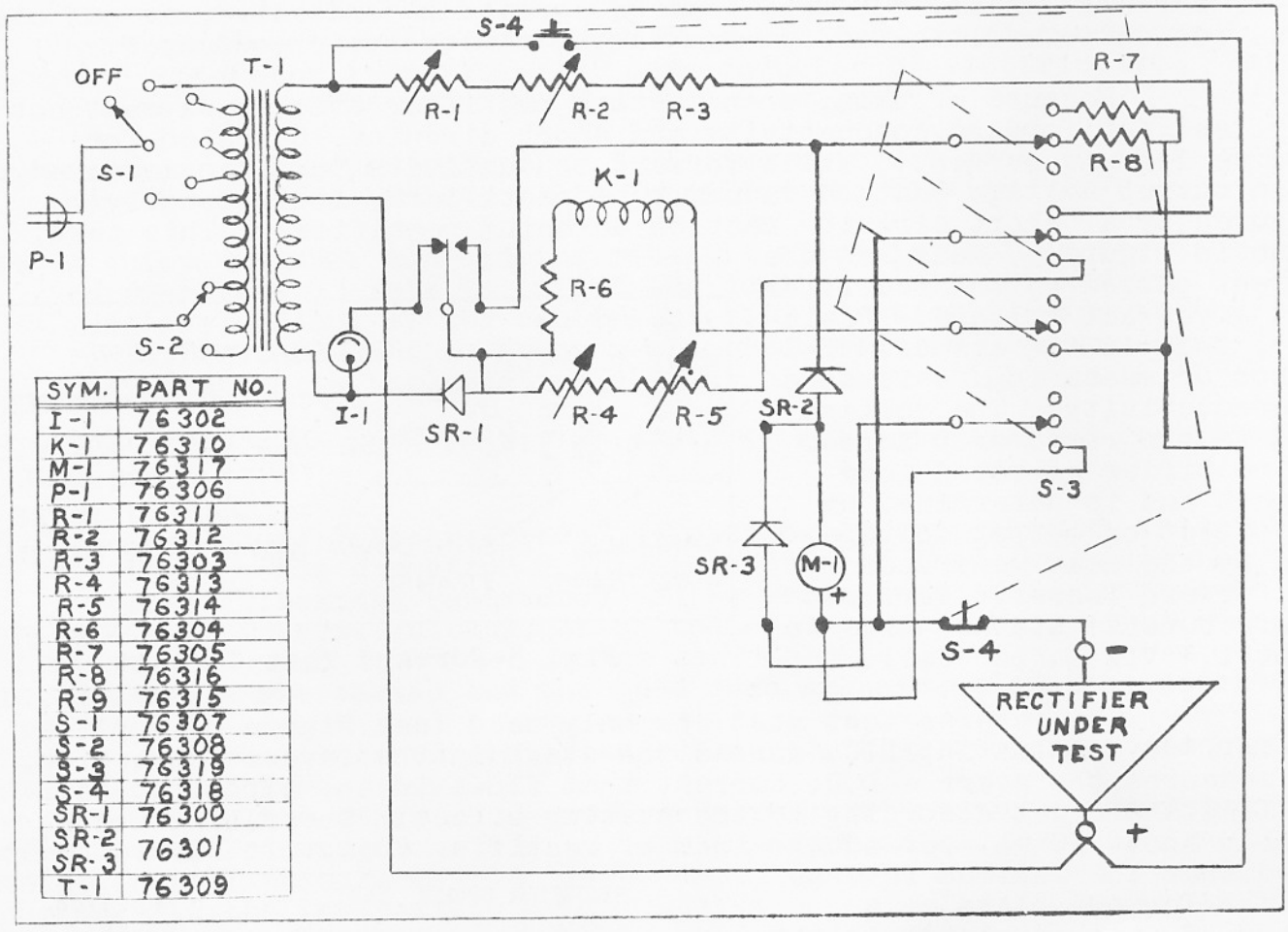


Fig. 6-Reverse Test Circuit

Many rectifiers will undergo a decrease in reverse resistance upon standing for any length of time without potential being applied. If such a rectifier is put into a set, it will draw excess reverse leakage currect which may cause it to overheat and burn out, or cause damage to the electrolytic condenser.

The reverse resistance can usually be brought back up by applying only reverse voltage to the stack for a short period of time. This can be done on the reverse test circuit shown in Figure 6. However, great care must be taken to protect the circuit components (especially the meter) from the high initial current and from the probability of breakdown during this reforming.



SYM.	PART NO.
I-1	76302
K-1	76310
M-1	76317
P-1	76306
R-1	76311
R-2	76312
R-3	76303
R-4	76313
R-5	76314
R-6	76304
R-7	76305
R-8	76316
R-9	76315
S-1	76307
S-2	76308
S-3	76319
S-4	76318
SR-1	76300
SR-2 SR-3	76301
T-1	76309

Figure 7 - Schematic Diagram of Your "Seletester"

"SELETESTER" OPERATING PRINCIPLES

It should be noted that if the two circuits shown in Figures 5 and 6 were combined into one test instrument, the meter would read upscale for good (high conductivity) on the forward test and downscale for good (low leakage current) on the reverse test. This means there would have to be separate meter scales which would cause a great deal of confusion. In your "Seletester" this is eliminated by a special circuit that measures the forward voltage across the stack at or near rated current. This means that "good" is now downscale on both forward and reverse; and, therefore, a single meter scale is all that is used.

To these forward and reverse test circuits a special protective relay cirucit has been added. This uses a single relay to positively indicate open or shorted stacks, and, also, offers positive protection for the meter against shorted stacks, stacks connected backwards and any misuse of the instrument.

In the "Seletester" the line voltage adjustment is made by means of taps on the transformer rather than by means of a series resistance as it is in other test devices. This leads to much better voltage regulation, and, therefore, to much more accurate indication of the quality of the rectifier being tested.

One of the most important features of the "Seletester" is the continuously variable shunts and multipliers that are used instead of a tap switch arrangement. This permits a separate, accurate setting for each rating of electronic rectifier now in use and, also, allows for any new rectifiers of this type, which may be introduced in the future. Galvanic Products Corporation will mail the settings for new rectifiers to all registered "Seletester" owners as these rectifiers are introduced. These settings will also be published in our ads in leading trade publications.

The protective circuits in your "Seletester" allow the instrument to be used as an electroforming cirucit for badly deformed rectifiers. This feature is incorporated right into the reverse circuit for easy operation.

Figure 7 shows a schematic diagram of your "Seletester".

EXACTLY WHAT THE "SELETESTER" DOES

The "Seletester" makes all of the four pertinent tests necessary for proper evaluation of the condition of a miniature electronic selenium rectifier. These four tests and the troubles that rectifiers, which do not pass them, can cause follow:

1. Open test - open rectifiers will give no output voltage.

2. Short test - shorted rectifiers can burn out series resistor or damage electrolytic capacitor - also, cause no output voltage.

3. Forward conductivity test - rectifiers with high forward resistance can cause low output voltage and ripple (which causes hum). If the forward resistance is excessively high, it can cause overheating, which can cause the rectifier to burn out before its full useful life.

4. Reverse leakage test - a rectifier that draws excessive reverse leakage current (peculiar to dry metallic rectifiers) can damage the electrolytic condenser or the series resistor and is almost sure to burn out quickly. Such a rectifier will also cause low output voltage.

Your "Seletester" can also be used as an electroforming circuit -- that is, to apply the proper type of power, which is necessary to cause the reverse resistance to rebuild on rectifiers that have shelf-aged badly. Often, when a rectifier is taken off the shelf, it will tend to draw excessive leakage current; but this current will decrease if a

voltage of the proper waveshape is applied to the stack. If such a rectifier were put into a set without first going through this "reforming" process, it could burn out or cause damage to other components.

SYMPTOMS OF A BAD ELECTRONIC SELENIUM RECITIFER (WHEN TO USE THE "SELETESTER")

Any of the following conditions can be caused by a bad selenium rectifier; and if any of these occur, all the selenium rectifiers in the set should be checked on the "Seletester" before replacing any other parts. As a bad rectifier can damage many other components, the replacement parts will continue to burn out until the bad rectifier is replaced.

Symptoms:

1. Burnt out fuse.
2. Burnt out series resistor.
3. Burnt out power transformer.
4. Burnt out or otherwise damaged electrolytic condensers.
5. No B + voltage (no picture or sound).
6. Low B + voltage (small picture and low sound volume).
7. Hum (ripple). (60 c.p.s. pattern on picture and hum on sound.)
8. A very distasteful, bad odor from the set.

While these conditions can be caused by other defects, such as a short circuited electrolytic condenser or some other short circuit in the set, the rectifier should still be tested on the "Seletester", as it may have been permanently damaged by the high currents that flowed due to the short circuit.

FUNCTIONS OF YOUR "SELETESTER" PANEL COMPONENTS

1. Dial "A" and "B": These dials select the correct resistance value to be placed in series with the rectifier under forward test. The setting of these dials is determined by the rating of the rectifier under test.

2. Dial "C" and "D": These dials select the proper shunt resistance to be placed in parallel with the meter in the reverse test. The setting of these dials is determined by the rating of the rectifier under test.

3. Dial "E": This dial selects the proper forward and reverse test voltage for the voltage rating of the rectifier. The setting of this dial is determined by the input voltage rating of the rectifier under test.

4. "Line Adjust" Dial: This dial, when used together with the line adjust line of the meter, selects the proper voltage for forward and reverse tests when the input voltage to the instrument varies from a nominal 115 volts. The setting of this dial will depend on the input voltage.

5. "Forward and Reverse Test" Lever Switch: This switch removes all voltages from the test prods of the instrument when in its normal center position. In the forward position, the meter circuits and the rectifier under test is inserted into the

forward test circuit. In the reverse position the meter circuits and the rectifier under test is inserted into the reverse test circuits.

6. "Short Indicator": This is a neon pilot light, which lights up only if a shorted stack is inserted into the reverse test circuit. If the stack is open, a loud buzzing noise will be heard.

7. "Line Adjust" Button: This button, when depressed, allows the output of the transformer to be measured on the instrument's meter. This permits the testing voltage of both forward and reverse tests to be maintained almost constant regardless of what the input voltage may be.

SPECIFIC OPERATING INSTRUCTIONS

Before going through these instructions, study Figure 7 carefully so that you clearly understand the function of the "Seletester" panel components.

1. Adjust line voltage by pressing line adjust button (which connects meter as a voltmeter) and rotating line adjust-off knob (which changes taps on the transformer primary) until needle coincides with line adjust needle on meter face. Switch "E" must be in Position "1" during line adjust.

2. (a) Turn "off" equipment in which the selenium rectifier is to be tested. Even if the unit is not connected to a source of power, make sure the switch is in the "off" position. Now proceed with (b) or (c), which is appropriate.
(b) If a single half-wave rectifier is to be tested, remove any one tube from the chassis and the rectifier may be tested without unsoldering from circuit. Connect the "red" clip to the positive terminal of the rectifier and the "black" clip to the negative terminal. The positive terminal can be identified by a K or + marking. However, if this is not visable, this terminal can be identified by the fact that it is on the shiny metallic side of the rectifier stack, or by the fact that this terminal is always connected to the positive condenser terminal. Now proceed with Step 3.
(c) If more than one selenium rectifier stack is used in the circuit, remove all leads to each rectifier under test. Many times two rectifier stacks are mounted in series as a single unit for use in doubler circuits. These have only three terminals -- the common one being positive for one stack and negative for the other. Always treat this unit type of a doubler stack as two separate stacks for test purposes and always make sure to test each stack. Connect the "red" clip to the positive terminal of the particular stack being tested and the "black" clip to the negative terminal. The positive terminal can be identified by a K or + marking. However, if this is not visable, this terminal can be identified by the fact that it is on the shiny metallic side of the rectifier stack, or by the fact that this terminal is always connected to the positive condenser terminal. Now proceed with Step 3.

3. Set the shunts, multipliers and voltages for the particular selenium rectifier you are checking by means of the knobs on the "Seletester" panel. The settings will be found on the chart on the side of the "Seletester" or on the back cover of this instruction manual. If no code number is visible on the particular rectifier that you are testing,

carefully check the circuit diagram and/or parts list of the set you are servicing to determine this code or part number. If the code number is not visible and no circuit diagram or parts list is available, the "estimated setting rule" given at the end of these instructions should be used.

4. Throw lever switch to "reverse test" position and note shorted and open meter indications. The red short indicator light will glow if the stack is shorted and a loud buzzing sound will be heard if the stack is open. Reject all open or shorted rectifier stacks. However, before rejecting a stack as shorted, carefully check the polarity, as a stack that is connected backwards will indicate shorted. On "shorted" and "open" stacks the meter should not read. If the meter reads when the buzzing sound is heard, it indicates a very badly leaky stack which should be rejected.

5. With switch still in reverse test position, note reverse test reading on meter. If rectifier is good, the needle will indicate "good" in less than two minutes. Because of possible deforming on new rectifiers taken from the shelf, more than two minutes can be allowed for "reforming". However, whenever this is done, the rectifer should be allowed to cool and then should be retested with the two minute time limit.

6. Throw switch to forward test and reject rectifiers that read "bad" on the meter. This is an instantaneous test and no time need be allowed as on the reverse test.

NOTE: When it appears that the reverse test will take a good part of the two minute time limit, a time saving can be effected by making the forward test and then returning to the reverse test, as a stack that is "bad" on forward must be rejected regardless of the reverse test result. However, the reverse test should always be the first test, as the short and open tests are part of this test.

When replacing a "bad" rectifier, always make sure first to test the replacement rectifier on your "Seletester".

ESTIMATED SETTING RULE (WHEN CODE NUMBER AND CIRCUIT DIAGRAM OR PART LIST IS NOT AVAILABLE)

If there is no way available to find the code number of the rectifier stack being tested, the following simple rules may be followed as a last resort:

1. If the stack or each section of the stack has six or less plates, set switch "E" to "1". If stack has more than six plates, set switch "E" to "2". Remember on doubler stacks to count the number of plates per section only and not the total number of plates.

2. Besides the code numbers of the stacks on the "Seletester" chart, various ratings in milliamperes are also shown. If the length of the side of one plate in the stack being tested is taken, the rating of the stack can then be found from the following list. The settings along side the rating on the "Seletest" chart can now be used in testing this stack. When a rating is repeated more than once, make sure to use that group of settings which includes the setting of "E" determined in part 1 of this rule:

1/2"	-	50 ma.
1"	-	75 ma.
1" to 1-3/16"	-	100 ma.
1-1/4"	-	150 ma.
1-1/2"	-	300 ma.
2"	-	450 ma.

TYPICAL RECTIFIER CIRCUITS

Figures 8 and 9 show the typical selenium rectifier circuits that are used in radio and television sets. On these diagrams, proper indication of how to connect to the rectifier stacks is shown. On the half-wave circuit, the explanation of why the stack can be tested without removing from the set is given.

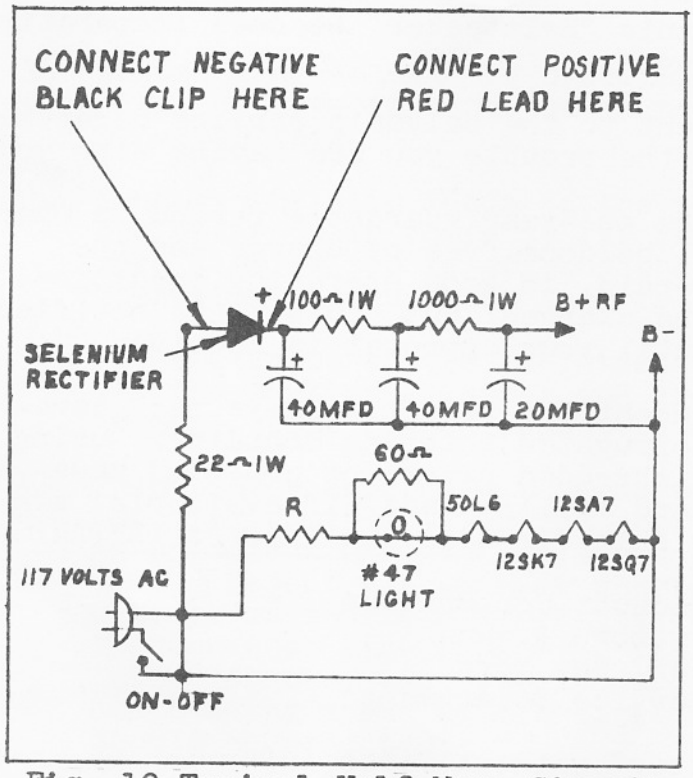


Fig. 10-Typical Half-Wave Circuit

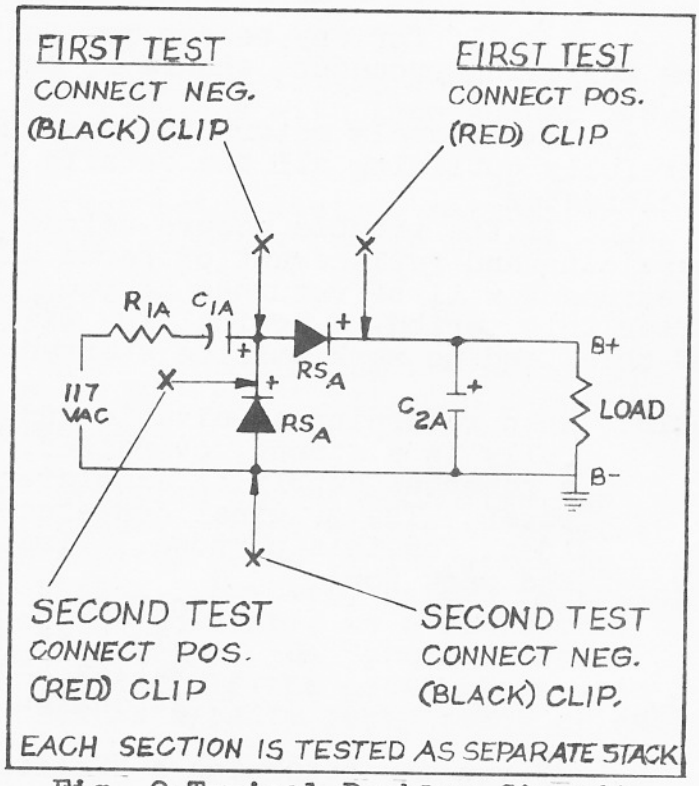


Fig. 9-Typical Doubler Circuit

HANDLING SELENIUM RECTIFIERS AND REPLACING DEFICIENT RECTIFIER STACKS

If a stack burns out while you are servicing a set, make sure to air out the room thoroughly so that all the fumes are removed. These fumes can cause temporary toxic effect, so try to avoid inhaling too much of them. Also, remember that a stack is quite hot after burning out, so avoid touching this type of stack, as a skin burn in the presence of selenium may infect quite easily.

When replacing a bad selenium rectifier, always make sure to test the new stack on your "Seletester" before installing it, as you may harm other components if the new stack is not good or needs some additional electroforming. When on calls, it pays to carry more than one of each type of rectifier so that you have a choice and so do not have to waste time with long electroforming cycles, which you can do in a spare moment in your shop.

Before replacing a bad rectifier, carefully check to see that there are no short circuits or damaged electrolytics in the set, which would cause the replacement rectifier to burn out.

"SELETESTER" SERVICE NOTES

Your Galvanic "Seletester" has been designed to accurately indicate the merit of selenium rectifiers and is ruggedly constructed to withstand the wear and tear of general field use. All components have been exhaustively life tested in our laboratories and thoroughly sample-tested by our inspection department. Your Galvanic "Seletester" has been designed with a large margin of safety, both electrically and mechanically. However, there are two major contributors to inoperative instruments, namely:

1. Damages caused by poor handling in transit. Claims for such damages should be made against the carrier involved.

2. Occasional components failure after the instruments have been thoroughly inspected by Galvanic's performance test department.

If for any reason you Galvanic "Seletester" becomes inoperative, the following procedure should be followed:

a. Immediately return the instrument to the Galvanic service department carefully outlining all the details of the trouble you are having with your "Seletester".

b. If the trouble occurs before the one-year guarantee period is over, servicing and replacement of parts will be done free of charge and the instrument will be returned to you, prepaid, in good operating condition. After this period, a nominal fee will be charged; but you will be notified of this, and no work will be started until your approval is received.

NOTE: When returning a Galvanic instrument for repair, always pack carefully in a strong, oversized, corrugated shipping container, using a generous supply of excelsior, shredded paper, or crumbled newspaper. The original container and filling pads (if available) are ideal for this purpose. Please ship via Railroad Express PREPAID and mark for:

Galvanic Products Corporation
110 East Hawthorne Avenue
Valley Stream, New York
Attention Service Department

If you are returning a "Seletester" without first informing us, make sure it is accompanied by a detailed description of the difficulties encountered. The more explicit the details the more rapidly your "Seletester" can be serviced.

GENERAL NOTES

1. There are no fuses in your "Seletester"--all of the circuit components are adequately protected by the relay and non-linear shunt.
2. As new rectifiers are introduced, Galvanic will periodically mail to you, free of charge, the new "Seletester" settings, which you can then enter on the blank spaces on the chart. When enough new settings are accumulated, Galvanic will issue new up-to-date charts which you will also receive free of charge. These settings will also be published in our ads in leading trade publications.
3. A guarantee-registration card is enclosed with this instrument. Mail at once for proper registration and start of guarantee.

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GALVANIC PRODUCTS CORPORATION

110 East Hawthorne Avenue Valley Stream, New York

CONDENSED OPERATING INSTRUCTIONS

Caution: Do not use these instructions until you have carefully read this instruction booklet, or at least not until you have read the specific operating instructions on page 8.

1. Adjust line voltage by pressing "line adjust" button and rotating "line adjust-off" knob until needle coincides with line adjust mark on meter face.

2. Connect the clip leads to the rectifier being tested, making sure the polarity is correct. If rectifier is being tested in set, make sure line switch is off and that instructions in part 2 of "Specific Operating Instructions" are followed.

3. Set the knobs on the "Seletester" panel according to the settings for the particular stack you are testing. See "Estimated Setting Rule" if code number cannot be determined.

4. Throw lever switch to reverse test position and note shorted and open indications. The red short indicator light will glow if stack is shorted and aloud buzzing sound will be heard if the stack is open. Reject all open or shorted stacks. However, before rejecting a stack as shorted, carefully check the polarity, as a stack that is connected backwards will indicate shorted. On "shorted" and "open" stacks, the meter should not read. If the meter reads when the buzzing sound is heard, it indicates a badly leaky stack which should be rejected.

5. With switch still in reverse position, note reverse test reading on meter. If rectifier is good, the needle will indicate good in less than two minutes. For electroforming new stacks, see "Specific Operating Instructions".

6. Throw switch to forward test and reject rectifiers that read "bad" on meter. This is an instantaneous test and no time need be allowed as on the reverse test.

When replacing a "bad" rectifier, always make sure first to test the replacement rectifier in your "Seletester".

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GALVANIC PRODUCTS CORPORATION
110 East Hawthorne Avenue
Valley Stream, New York

"SELETESTER" CHART

Caution: Do not use this instrument without first reading instruction book.

TO ADJUST LINE: SET DIAL "E" TO "1".

STACK RATING (MILLIAMPERES)	FEDERAL F.T.R.	SARKES-TARZIAN	RADIO RECEPTOR	INTERNATIONAL RECTIFIER CORP.	MALLORY	SYLVANIA	ELECTRONIC DEVICES, INC.	DIAL SETTINGS				
								A	B	C	D	E
20	1097		8Y1					50	77	0	100	1
35		Mod 35			6S35			72	87	6	20	1
40							RS 40	76	87	7.5	0	1
50	402D3200A							82	77	8	0	1
65	402D3452A	Mod 65	8J1	RS65	6S65	NA-5	RS 65	86	91	8.5	0	1
75	402D3150A	Mod 75	5M4	RS75	6S75	NB-5	RS 75	88	91	19	0	1
100	1101A	Mod 100			6S100			100	5	60	70	1
100	403D2625A	Mod 100A	5M1	RS100	6S100A	NC-5	RS100	100	5	60	70	1
150	403D2787A	Mod 150	5P1	RS150	6S150	ND-5	RS150	100	40	80	60	1
200	404D2795A	Mod 200	5R1	RS200	6S200	NE-5	RS200	100	57	92	0	1
250	404D3450	Mod 250	5Q1	RS250	6S250	NF-5	RS250	100	68	92	50	1
275	1087A							100	72	92	0	1
300	1090A	Mod 300	6Q4	RS300	6S300		RS300	100	75	96	0	1
350	1023	Mod 350	5QS1	RS350	6S350		RS350	100	80	100	0	1
400	1130			RS400		NH-5	RS400	100	84	100	20	1
450	439D4200	Mod 450			6S450	NJ-5	RS450	100	87	100	25	1
500			5S1	RS500			RS500	100	89.5	98	50	1
1000				RS1000				100	100	100	40	1
40							RS-40-6	52	89	7.5	0	2
100	403D2889A	Mod 108	6M1					82	91	60	70	2
100			6P2					82	91	60	70	2
150			6P1					90	77	80	60	2
200			6R1					100	11	92	0	2
250			6Q1					100	30	92	50	2
250			6Q2					100	30	92	50	2
350			6QS2					100	53	100	0	2
350			6QS1					100	53	100	0	2
450	439D4300							100	66	100	25	2
500			6S1					100	71	98	50	2
500			6S2					100	71	98	50	2
75	*402D3239A	*Mod 78D						76	87	10	0	2
100	*403D3240A	*Mod108D						82	91	60	70	2
200	*404D3241A	*Mod208D						100	11	92	0	2
20			*16Y1					50	77	0	100	1
65			*16J1					86	91	8.5	0	1

* These rectifiers have two sections. Test each section as an individual rectifier. Both sections must test good for rectifier to be good. If rectifier code number is not legible, carefully check code number on circuit diagram of set under service.

NOTE: SINCE PUBLICATION OF "SELETESTER" INSTRUCTION BOOKLET, F.T.R. HAS CHANGED THEIR CODE NUMBERS. THE NEW NUMBERS ARE ON THIS SUPPLEMENTARY CHART.

SUPPLEMENTARY "SELETESTER" CHART A - October 9, 1952

Caution: Do not use this instrument without first reading instruction book.

TO ADJUST LINE: SET DIAL "E" TO "1".

STACK RATING (MILLIAMPERES)	FEDERAL F.T.R. **	SARKES-TARZIAN	RADIO RECEPTOR	INTERNATIONAL RECTIFIER CORP.	MALLORY	SYLVANIA	ELECTRONIC DEVICES, INC.	DIAL SETTINGS				
								A	B	C	D	E
20	1097		8Y1					50	77	0	100	1
35		Mod 35			6S35			72	87	6	20	1
40							RS 40	76	87	7.5	0	1
50	402D3200							82	77	8	0	1
65	1002	Mod 65	8J1	RS65	6S65	NA-5	RS 65	86	91	8.5	0	1
75	1003	Mod 75	5M4	RS75	6S75	NB-5	RS 75	88	91	19	0	1
100	1101	Mod 100			6S100			100	5	60	70	1
100	1004	Mod 100A	5M1	RS100	6S100A	NC-5	RS100	100	5	60	70	1
150	1005	Mod 150	5P1	RS150	6S150	ND-5	RS150	100	40	80	60	1
200	1006	Mod 200	5R1	RS200	6S200	NE-5	RS200	100	57	92	0	1
250	1010	Mod 250	5Q1	RS250	6S250	NF-5	RS250	100	68	92	50	1
275	1087							100	72	92	0	1
300	1090	Mod 300	6Q4	RS300	6S300		RS300	100	75	96	0	1
350	1023	Mod 350	5QS1	RS350	6S350		RS350	100	80	100	0	1
400	1130			RS400		NH-5	RS400	100	84	100	20	1
450	1021	Mod 450			6S450	NJ-5	RS450	100	87	100	25	1
500			5S1	RS500			RS500	100	89.5	98	50	1
1000				RS1000				100	100	100	40	1
40							RS-40-6	52	89	7.5	0	2
100	1014	Mod 108	6M1					82	91	60	70	2
100			6P2					82	91	60	70	2
150			6P1					90	77	80	60	2
200			6R1					100	11	92	0	2
250			6Q1					100	30	92	50	2
250			6Q2					100	30	92	50	2
350			6QS2					100	53	100	0	2
350			6QS1					100	53	100	0	2
450	1022							100	66	100	25	2
500			6S1					100	71	98	50	2
500			6S2					100	71	98	50	2
75	1007	*Mod 78D						76	87	10	0	2
100	1008	*Mod108D						82	91	60	70	2
200	1009	*Mod208D						100	11	92	0	2
20			*16Y1					50	77	0	100	1
65			*16J1					86	91	8.5	0	1

**** Use same settings when code number is followed by "A."**

* These rectifiers have two sections. Test each section as an individual rectifier. Both sections must test good for rectifier to be good. If rectifier code number is not legible, carefully check code number on circuit diagram of set under service.

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